

09/654,401

- 2 -

Amendments to the Specification

Please replace the paragraph at page 10, lines 19 through 26 with the following amended paragraph:

In one embodiment of the present invention, a SLDS model includes a state transition recorder which determines the state transition record, and which determines the optimal final switching state for [[the]] a final measurement. A backtracker determines the sequence of switching states corresponding to the training sequence by backtracking, from the optimal final switching state, through the state transition record. A dynamic model learner learns parameters of the dynamic models responsive to the determined sequence of switching states, and a synthesizer synthesizes a new data sequence, based on dynamic models whose parameters have been learned.

Please replace the paragraph at page 17, line 3 with the following amended paragraph:

$$\begin{aligned}
 H(X_T, S_T, Y_T) = & \frac{1}{2} \sum_{t=1}^{T-1} \sum_{i=0}^{N-1} [(x_t - A_t x_{t-1})' Q_t^{-1} (x_t - A_t x_{t-1}) + \log |Q_t|] s_t(i) \\
 & + \frac{1}{2} \sum_{i=0}^{N-1} [(x_{0,i})' Q_{0,i}^{-1} (x_{0,i}) + \log |Q_{0,i}|] s_0(i) + \frac{NT}{2} \log 2\pi \\
 & + \frac{1}{2} \sum_{t=0}^{T-1} (y_t - Cx_t)' R^{-1} (y_t - Cx_t) + \frac{T}{2} \log |R| + \frac{MT}{2} \log 2\pi \\
 & + \sum_{i=1}^{T-1} s'_i (-\log \prod) s_{i-1} + s'_0 (-\log \pi_0).
 \end{aligned}$$

(Eq. 3)

Please replace the paragraph at page 20, line 11 with the following amended paragraph:

$$\begin{aligned}
 [[\hat{X}_{t|t,i}]] \hat{x}_{t|t,i} & \triangleq \langle x_t | Y_t, s_t = e_i \rangle \\
 \sum_{t|t,i} & \triangleq \langle (x_t - \hat{x}_{t|t,i})(x_t - \hat{x}_{t|t,i})' | Y_t, s_t = e_i \rangle
 \end{aligned}$$

Please replace the paragraph at page 29, line 1 with the following amended paragraph:

Initialize $\Pr(s_0 = i) = [[p(i)]] \pi(i)$, for $i=0, \dots, S-1$; (Step 202)